

1 WHAT IS CLAIMED IS:

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3 1. A method for immunizing an animal against heterologous HIV-1 comprising
4 administering to said animal an immunogen comprising at least one modified
5 HIV-1 envelope protein or fragment thereof, or DNA or virus encoding said at
6 least one modified HIV-1 envelope protein or fragment thereof, or a
7 combination thereof, said modified envelope protein or fragment thereof
8 having a V2 region deletion, wherein said animal exhibits immunity to at least
9 one HIV-1 strain other than that of said immunogen.

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11 2. The method of claim 1 wherein said immunity comprises a humoral response.

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13 3. The method of claim 1 wherein said immunogen comprises a modified HIV-1
14 envelope protein from a clade-B HIV-1 strain.

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16 4. The method of claim 3 wherein said HIV-strain is SF162.

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18 5. The method of claim 4 wherein said modified HIV-1 envelope protein is SEQ
19 ID No:2 or SEQ ID No:4.

20

21 6. The method of claim 4 wherein said DNA encoding said at least one modified
22 HIV-1 envelope protein is SEQ ID No:1 or SEQ ID No:3.

23

24 7. The method of claim 2 wherein said humoral response comprises neutralizing
25 antibodies.

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SEQUENCE LISTING

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- 1 ~~8.~~^{9.} The method of claim 2 wherein said humoral response comprises protective
2 antibodies.
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- 4 ~~8.~~^{9.} The method of claim 1 wherein said animal is a human.
- 5
- 6 ~~9.~~^{10.} A method for eliciting a heterologous immune response to HIV-1 in an animal
7 comprising immunizing said animal with an immunogen comprising at least
8 one modified HIV-1 envelope protein or fragment thereof, or DNA or virus
9 encoding said at least one modified HIV-1 envelope protein or fragment
10 thereof, or a combination thereof, said modified envelope protein or fragment
11 thereof having a V2 region deletion, wherein said animal exhibits a an
12 envelope-specific immune response to at least one HIV-1 strain other than that
13 of said immunogen.
- 14
- 15 ~~10.~~^{11.} The method of claim 9 wherein said envelope-specific immune response
16 comprises a humoral response.
- 17
- 18 ~~11.~~^{12.} The method of claim 9 wherein said immunogen comprises a modified HIV-1
19 envelope protein from a clade-B HIV-1 strain.
- 20
- 21 ~~12.~~^{13.} The method of claim 11 wherein said HIV-strain is SF162.
- 22
- 23 ~~13.~~^{14.} The method of claim 12 wherein said modified HIV-1 envelope protein is SEQ
24 ID No:2 or SEQ ID No:4.
- 25

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- 1 ¹⁵
~~14.~~ The method of claim 12 wherein said DNA encoding said at least one modified
- 2 HIV-1 envelope protein is SEQ ID No:1 or SEQ ID No:3.
- 3
- 4 ¹⁶
~~15.~~ The method of claim 10 wherein said humoral response comprises neutralizing
- 5 antibodies.
- 6
- 7 ¹⁷
~~16.~~ The method of claim 10 wherein said humoral response comprises protective
- 8 antibodies.
- 9
- 10 ¹⁸
~~17.~~ The method of claim 9 wherein said animal is a human.
- 11
- 12 ¹⁹
~~18.~~ A pharmaceutical composition for immunizing an animal against HIV-1 virus
- 13 comprising an effective heterologous envelope-specific immune response-
- 14 eliciting amount of at least one modified HIV-1 envelope protein or fragment
- 15 thereof, or DNA or virus encoding said at least one modified HIV-1 envelope
- 16 protein or fragment thereof, or a combination thereof, said modified envelope
- 17 protein or fragment thereof having a V2 region deletion; and a
- 18 pharmaceutically-acceptable carrier or excipient.
- 19
- 20 ²⁰
~~19.~~ The pharmaceutical composition of claim 18 wherein said modified HIV-1
- 21 envelope protein is from a clade-B HIV-1 strain.
- 22
- 23 ²¹
~~20.~~ The pharmaceutical composition of claim 19 wherein said HIV-1 strain is
- 24 SF162.
- 25

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- 1 ²²
21. The pharmaceutical composition of claim 20 wherein said modified HIV-1
2 envelope protein is SEQ ID No:2 or SEQ ID No:4.
- 3
- 4 ²³
22. The pharmaceutical composition of claim 20 wherein said DNA encoding said
5 at least one modified HIV-1 envelope protein is SEQ ID No:1 or SEQ ID No:3.
- 6
- 7 ²⁴
23. A method for assessing whether a compound is capable of generating
8 protective antibodies in an animal against at least one heterologous strain of
9 HIV-1, said animal capable of developing protective antibodies against wild-
10 type HIV-1, said method comprising the steps of immunizing said animal with
11 said compound, depleting said animal of its CD8+ T-lymphocytes, and
12 assessing the presence of protective antibodies in the said animal to at least one
13 heterologous strain of HIV-1.
- 14
- 15 ²⁵
24. The method of claim 23 wherein said depleting is carried out by administering
16 to said animal anti-CD8 monoclonal antibodies.
- 17
- 18 ²⁶
25. The method of claim 23 wherein said compound is an HIV-derived polypeptide
19 or fragment thereof or a DNA or virus encoding said peptide or fragment
20 thereof.
- 21
- 22 ²⁷
26. The method of claim 23 wherein said immunizing is carried out with a DNA
23 vaccine, a protein, or a combination thereof.
- 24
- 25 ²⁸
27. The method of claim 23 wherein said neutralizing antibodies are protective
26 antibodies.